AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-44 (canceled)

44 (Original). A method of measuring concentration of an optically active substance in the anterior chamber of an eye, comprising the steps of:

(a) guiding a polarized beam so it is generally parallel to a reflective interior surface of the eye;

(b) introducing the beam into the anterior chamber such that it is refracted within the anterior chamber, impinges on the reflective interior surface, is reflected therefrom, and then exits the anterior chamber approximately collinear with the beam immediately before the point at which it is introduced into the anterior chamber;

(c) guiding the beam exiting from the anterior chamber through an analyzer and onto a detector; and

(d) applying a signal to a polarization modulator to extinguish light passing from the analyzer to the detector, the signal representing the concentration of the optically active ingredient in the anterior chamber.

45 (Original). The method of Claim 44 including the step of adjusting the orientation of a portion of the beam incident on a cornea of the eye until a stable, substantially increased output signal level is produced by the detector.

46 (Original). The method of Claim 44 wherein the optically active substance includes glucose.

47 (Original). The method of Claim 44 including calibrating the analyzer to extinguish light passing from the analyzer to the detector before performing step (a).

48 (Original). The method of Claim 47 wherein step (d) includes simultaneously applying a DC signal and an AC signal to the polarization modulator to extinguish light of the beam to prevent it from passing from the analyzer to the detector by shifting the DC signal to a value that produces a null in the AC component of a corresponding output signal produced by the detector, the value of the shifted DC signal then representing the glucose concentration in the anterior chamber.

49 (Original). A method of measuring concentration of an optically active substance in the anterior chamber of an eye, comprising the steps of:

(a) guiding a beam through a polarizer oriented in a first direction to polarize the light in a first direction, and then through a polarization modulator and an analyzer oriented in the second direction to polarize the light in a second direction, and then guiding the beam from the analyzer to a detector;

(b) adjusting at least one of the polarizer and the analyzer to extinguish light of the beam to prevent it from passing from the analyzer to the detector;

(c) guiding the beam, after it passes through the polarizer, so it is generally parallel to a reflective interior surface of the eye and then introducing the beam into the anterior

chamber such that it is refracted within the anterior chamber and impinges on the reflective interior surface, is reflected therefrom, and then exits the anterior chamber approximately collinear with the beam immediately before the point at which it is introduced into the anterior chamber;

(d) guiding the beam exiting from the anterior chamber onto the detector; and

(e) modifying a signal applied to the polarization modulator to extinguish light passing from the analyzer to the detector, the amount of modification of the signal representing the concentration of the optically active ingredient in the anterior chamber.

50 (Original). The method of Claim 49 including the step of adjusting the orientation of a portion of the beam incident on a cornea of the eye until a stable, substantially increased output signal level is produced by the detector.

51 (Original). The method of Claim 49 wherein the optically active substance includes glucose.

52 (Original). The method of Claim 49 wherein step (e) includes simultaneously applying a DC signal and an AC signal to the polarization modulator to extinguish light of the beam to prevent it from passing from the analyzer to the detector by shifting the DC signal to a value that produces a null in the AC component of a corresponding output signal produced by the detector, the value of the shifted DC signal then representing the glucose concentration in the anterior chamber.

53 (Original). The method of Claim 49 wherein step (b) is performed before step (e).

54 (Original). A system for measuring concentration of an optically active substance in an anterior chamber of the eye, comprising in combination:

(a) a light source producing a beam;

(b) a polarizer oriented in a first direction to polarize light of the beam in a first direction;

(c) a polarization modulator transmitting the beam after is has passed through the polarizer;

(d) an analyzer polarizing light from the polarization modulator in a second direction;

(e) a detector receiving light from the analyzer;

(f) a first optical structure introducing the beam, after it passes through the polarizer, into the anterior chamber generally parallel to a reflective interior surface of the eye so that the beam is refracted within the anterior chamber and impinges onto the reflective interior surface, is reflected from the reflective interior surface, and then exits the anterior chamber approximately collinear with the introduced beam;

(g) a second optical structure receiving the beam after it exits the anterior chamber and guiding it to the detector; and

(h) a polarization modulator control device coupled to a control terminal of the polarization modulator and operative to shift a DC bias signal applied to the polarization modulator to extinguish light of the beam to prevent it from passing from the analyzer to the detector.

55 (Original). The system of Claim 54 wherein the polarization modulator control device is operative to simultaneously apply a DC signal and an AC signal to the polarization modulator to extinguish any light passing through the analyzer to the detector by shifting the DC signal to a value that extinguishes any AC component of an output signal produced by the detector, the value of the shifted DC signal then representing the concentration of the optically active ingredient in the anterior chamber.

56 (Original). The system of Claim 54 wherein the optically active substance includes glucose.

57 (Original). The system of Claim 55 wherein the polarization modulator includes a Kerr cell.

58 (Original). The system of Claim 55 wherein the polarization modulator includes a Pockels cell.

59 (Original). A method of measuring glucose concentration in a sample, comprising the steps of:

(a) passing a beam of collimated light through a polarizer oriented in a first direction to polarize the light in the first direction, a polarization modulator, an analyzer oriented in a second direction to polarize the light in a second direction, and a focusing lens, and then to a detector;

(b) adjusting at least one of the polarizer and the analyzer to extinguish any light passing from the analyzer to the detector;

(c) locating the sample between the polarizer and the analyzer; and

(d) simultaneously applying a DC signal and an AC signal to the polarization modulator to extinguish any light passing from the analyzer to the detector, by shifting the DC signal to a value that produces a null in the AC component of an output signal produced by the detector, the value of the shifted DC signal then representing the glucose concentration in the

sample,

the method including passing the beam through the aqueous humor of a human eye so that a portion of the beam passing through the aqueous humor is approximately parallel to a reflective interior surface of the eye.

60 (Currently amended). ~~The method of Claim 59 wherein the sample is a portion of a person's skin in vivo.~~ A method of measuring glucose concentration in a sample, comprising the steps of:

(a) passing a beam of collimated light through a polarizer oriented in a first direction to polarize the light in the first direction, a polarization modulator, an analyzer oriented in a second direction to polarize the light in a second direction, and a focusing lens, and then to a detector;

(b) adjusting at least one of the polarizer and the analyzer to extinguish any light passing from the analyzer to the detector;

(c) locating a sample, namely a portion of a person's skin in vivo, between the polarizer and the analyzer; and

(d) simultaneously applying a DC signal and an AC signal to the polarization modulator to extinguish any light passing from the analyzer to the detector, by shifting the DC signal to a value that produces a null in the AC component of an output signal produced by the detector, the value of the shifted DC signal then representing the glucose concentration in the sample.

61 (Original). The method of Claim 60 wherein the ratio of the magnitude of the AC signal to the magnitude of the DC signal is in the range from about 10,000 to about 1,000,000.